

Rhodora

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OENOTHERA BIENNIS: FIG. 1, portion of plant naturalized in northwestern Europe, $\times 1$, *Buchenau*; FIG. 2, calyx, $\times 1$, from Magdalen Islands, Quebec; FIG. 3, calyx, $\times 3$, from Massachusetts; FIG. 4, expanded flower, $\times 1$, from Massachusetts; FIG. 5, flower, $\times 1$, from Minnesota; FIG. 6, seeds, $\times 5$, from New Hampshire.

O. BIENNIS, var. *NUTANS*: FIG. 7, calyx, $\times 3$, from Virginia; FIG. 8, expanded flower, $\times 1$, from Virginia; FIG. 9, expanded flower, $\times 1$, from New York; FIG. 10, seeds, $\times 5$, from Maryland.

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CONTRIBUTIONS FROM THE GRAY HERBARIUM OF
HARVARD UNIVERSITY—No. CLXIX.

PART II. STUDIES OF EASTERN AMERICAN PLANTS

M. L. FERNALD

(Continued from page 57)

3. SOME VARIETIES IN OENOTHERA (PLATES 1137-1143)

In studying the true *Oenotheras* of the "Manual range" I have, unfortunately, been unable to compile from a treatment of the group, such as Dr. Philip A. Munz has so satisfactorily supplied for the other subgenera. The long hoped-for study by him of § *Onagra* is still anxiously awaited. In the meantime the necessity to do something with this most variable and perplexing series (made more perplexing through the evident hybridization of species and the superabundance of vegetative mutants which have been described as "species") has necessitated two weeks of sorting and resorting of many hundreds of collections. It is gratifying to note that the primary distinctions several times emphasized by Wiegand seem to be of fundamental importance. Aside from the cultivated and escaped *O. grandiflora* Ait. (including the very similar *O. grandiflora* Lam. or *O. Lamarckiana* Ser.) and the Alleghenian *O. argillicola* Mackenzie (seeds shown in PLATE 1138, FIG. 11), we have what seem like three primary species, with fairly definite characters in habit, calyx and seeds. These technical but seemingly well established characters are shown in the plates prepared with her usual care by Dr. Schubert.

I am taking up *O. biennis* in the long-accepted sense, although much argument has been published, to the effect that something which had long been cultivated in Europe, and which had

spread to the open in northwestern continental Europe, cannot be matched with anything American. Before me, however, is a photograph of a plant which Linnaeus described in *Hortus Cliffortianus*, marked by him "*biennis*", which shows the distant, thin and spreading-ascending leaves, the tips of the calyx-lobes united at base into a definite tube and other characters which strikingly suggest *O. biennis* as interpreted by Robinson & Fernald and by Wiegand. A specimen in the Linnaean Herbarium (no. 484.1), which Linnaeus had before him in preparing ed. 1 of *Species Plantarum*, is also characteristic of the species as understood (very like the Hort. Cliff. specimen). Furthermore, specimens from various parts of Europe are the same; thus, material growing on dunes of the Ostfriesisch Inseln and sent by the late Professor Buchenau as *O. muricata* L. is partly of that plant, partly (our PLATE 1137, FIG. 1) of *O. biennis*.

O. biennis, then, has the membranaceous leaves minutely soft-pilose beneath, lanceolate to lance-oblong or sometimes oblong-ovate; the bracts of the inflorescence (except in one local var.) shorter and finally deciduous, leaving a naked fruiting spike; the calyx-lobes in the unexpanded buds with the slender tips closely connivent or parallel at base, thus forming a tube (PLATE 1137, FIGS. 1-4 and PLATE 1138, FIGS. 1-3, 7 and 9); the expanded and reflexed calyx-lobes (PLATE 1137, FIGS. 4, 5, 8 and 9, and PLATE 1138, FIGS. 5 and 8) 1-2.5 cm. long and arching or extending straight back (not deflected by the auricle). The fully mature seeds are 1.2-1.8 (-2) mm. long and 0.6-1.2 mm. broad, their angles (under magnification) with very narrow wings (PLATE 1137, FIGS. 6 and 10, and PLATE 1138, FIGS. 6 and 10). This collective species has four well defined geographic varieties. Typical *O. biennis* (PLATE 1137, FIGS. 1-6) or var. *vulgaris* Torr. & Gray, has the surfaces of the calyx, ovaries and capsules evident, and more or less villous, or the capsules merely hirsute and 1.5-3.5 cm. long. It is wide-ranging in dry soil from Newfoundland and the Côte Nord of Quebec to southeastern Alberta (local west of Manitoba), south to Nova Scotia, New England, Long Island, northern Florida, Tennessee, Arkansas, North Dakota and Idaho. Among minor trends are *O. comosa*, *grandifolia*, *Hazelae*, *novae-scotiae*, *parva* and *Royfraseri* R. R. Gates and *O. Victorini* Gates & Catcheside.

Very similar but with the often viscid body of the calyx (PLATE 1137, FIGS. 7–10) glabrous or essentially so, the glabrescent capsules only 1–2.5 cm. long, is var. *nutans* (Atkinson & Bartlett¹) Wiegand in RHODORA, xxvi. 3 (1924), based on *O. nutans* Atkinson & Bartlett in Science, n. s. xxxvii. 717 (1913) and RHODORA, xv. 83 (1913), ranging from New York to Georgia.

The other two most significant varieties have firmer and strongly ascending leaves. Their calyx-lobes, ovaries and capsules have the surfaces hidden by dense canescent or whitish pubescence. Var. *canescens* Torr. & Gray, Fl. N. Am. i. 492 (1840) (our PLATE 1138, FIGS. 1–6) has the pubescence of calyx and capsule of closely appressed and short strigae. It ranges from southern Quebec to southeastern Alberta, south to the coast of eastern New Brunswick, western New York, southern Ontario, Ohio, Illinois, Missouri and Oklahoma, being primarily a variety of the prairies. It includes *O. canovirens* Steele and *O. eriensis*, *niagarensis* and *repandodentata* R. R. Gates and passes insensibly into var. *hirsutissima* Gray in Mem. Am. Acad., n. s. iv¹. (Pl. Fendl.) 43 (1849) and in Pl. Wright. i. 69 (1852), our PLATE 1138, FIGS. 7–10. Var. *hirsutissima* has the pubescence of capsule and calyx with many ascending to spreading long villi. Gray defined var. *hirsutissima* in peculiarly bifurcate fashion: in Plantae Fendlerianae (1849), enumerating Fendler's New Mexican plants, he had

"218. OENOTHERA BIENNIS, var. HIRSUTISSIMA. Valley of Santa Fé Creek, in the mountains; June. Plant 2 to 3 feet high", he completing the description in Plantae Wrightianae three years later: "190. OE. BIENNIS, Linn., var. Along the Limpia.—This is the same strigose-hirsute variety as No. 218, Pl. Fendl., a form which is common in Oregon and along the Rocky Mountains".

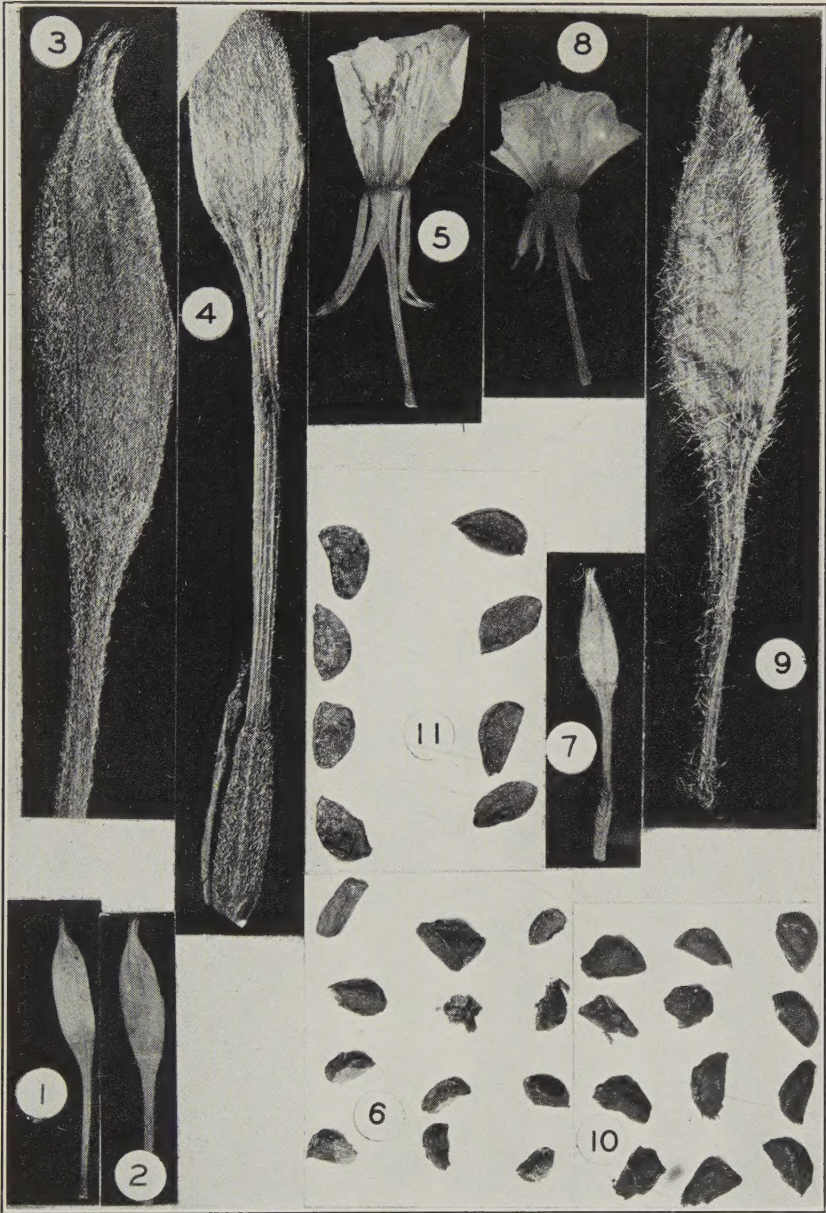
This, of course, is the transcontinental plant which was defined as *Onagra strigosa* Rydberg, Mem. N. Y. Bot. Gard. i. 278 (1900) and which was reduced to varietal rank as *Onagra biennis*, var. *strigosa* (Rydb.) Piper in Piper & Beattie, Fl. Palouse Reg. 124 (1901) and transferred to *Oenothera* as *Oenothera strigosa* (Rydb.) Mackenz. & Bush, Man. Fl. Jackson Co., Mo. 139 (1902). The dominant extreme of the species in the cordil-

¹ The citation in Index Londinensis of H. H. Bartlett as "Bartl." is misleading, in view of the long use of that abbreviation for Bartling.

leran region, var. *hirsutissima* is found in the East, especially near the coast. Its broad range is from southern Quebec to western British Columbia, south to Prince Edward Island, southern New England, New Jersey, Pennsylvania, Michigan, Illinois, Kansas, Texas, New Mexico, Arizona and northern Mexico.

Just as *Oenothera biennis* has more or less defined geographic varieties with pronounced differences in the density of pubescence of calyx, capsule, etc. but with the same form of calyxlobes and with small seed with evident thin and narrowly winged angles, so do the other two most common species of the East present somewhat definite varieties along parallel lines. In these two species the calyx has the slender tips not connivent and forming a tube at base; but in the bud they are distinct to base and somewhat distant (PLATE 1139, FIGS. 1 and 2 and 4, 5, 6 and 8, PLATE 1140, FIGS. 1 and 2, PLATE 1141, FIGS. 1-4, and PLATES 1142 and 1143. The auricle at junction of blade and slender tip is rather prominent and in the expanded calyx the tip is somewhat deflected, instead of continuing the direction of the blade, being usually 1-3 (rarely -5) mm. long. In these species the fully developed seeds are plump and larger than in *O. biennis* and filled out to the angles, which lack or nearly lack the evident thin and narrow wing (seen under magnification) of the latter species.

The first of these two is *Oenothera parviflora* L., Syst. ed. 10: 998 (1759) and Sp. Pl. ed. 2: 492 (1762) or *O. muricata* L. Syst. ed. 12: 263 (1767). The first description of Linnaeus was brief and misleading, for the emphasis was placed on a supposed 8-cleft summit of the fruit: "*Margo coronans fructum, non uti praeedentis quadrifidus, sed octofidus est*"; but the full description of 1762 was most satisfactory in saying: "*Caulis pilis adpersus, sed absque tuberculis ad eorum basin . . . Calyx tubo . . . infra apicem denticulo notatus, hinc ante explicationem mucrones in hac distantes*". The specimen in the Linnaean Herbarium (sheet 484.2) clearly marked by him as "*parviflora*" (photograph, like those of *O. biennis* and *O. muricata*, unfortunately too weak for reproduction) is a flowering one, with the long bracts and perfectly characteristic calyx of the plant identified by Wiegand as *O. parviflora*. Similarly, Linnaeus's type of *O. muricata*



Photo, B. G. Schubert

OENOTHERA BIENNIS, var. CANESCENS: FIG. 1, calyx, $\times 1$, from Saskatchewan; FIG. 2, calyx, $\times 1$, from isotype of *O. canovirens* Steele; FIG. 3, calyx, $\times 3$, from same plant as fig. 2; FIG. 4, ovary and portion of calyx, $\times 3$, from Iowa; FIG. 5, expanded flower, $\times 1$, from Saskatchewan; FIG. 6, seeds, $\times 5$, from Iowa.

O. BIENNIS, var. HIRSUTISSIMA: FIG. 7, calyx, $\times 1$, from Wyoming; FIG. 8, expanded flower, $\times 1$, from Idaho; FIG. 9, calyx, $\times 3$, from Wyoming; FIG. 10, seeds, $\times 5$, from Vancouver Island.

O. ARGILLICOLA: FIG. 11, seeds, $\times 5$, from West Virginia.



Photo. B. G. Schubert

OENOTHERA PARVIFLORA: FIG. 1, calyx, $\times 1$, from Quebec; FIG. 2, expanded flower, $\times 1$, from Quebec; FIG. 3, seeds, $\times 5$, from Prince Edward Island.

O. PARVIFLORA, var. *ANGUSTISSIMA*: FIG. 4, summit of plant, $\times 1$, from New York; FIG. 5, calyx, $\times 1$, from same plant as fig. 4; FIG. 6, same calyx, $\times 3$.

O. PARVIFLORA, var. *OAKESIANA*: FIG. 7, seeds, $\times 5$, from Massachusetts.

O. CRUCIATA: FIG. 8, portion of TYPE, \times ca. $\frac{1}{2}$.

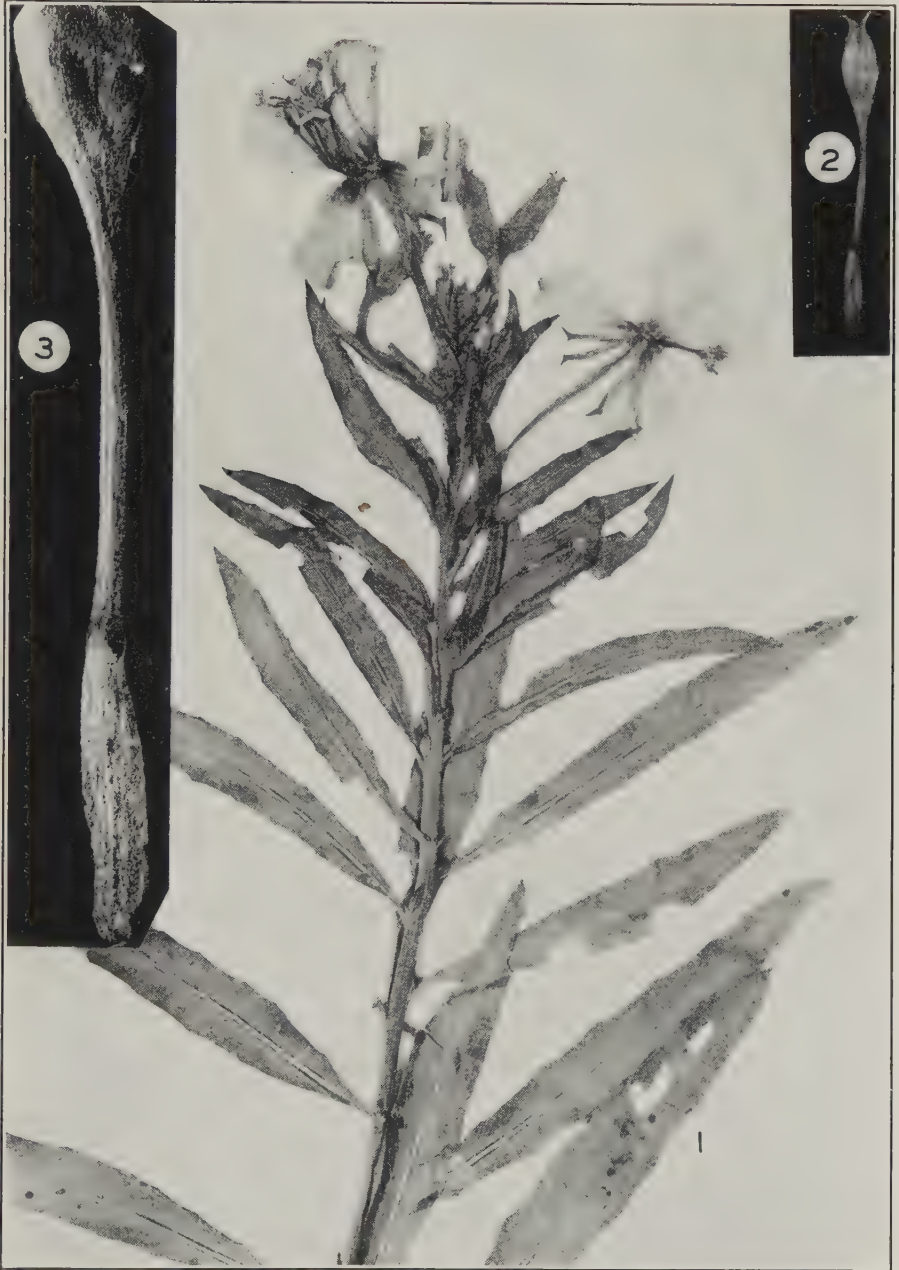


Photo. B. G. Schubert

OENOTHERA PARVIFLORA, var. OAKESIANA: FIG. 1, summit of TYPE of *O. OAKESIANA* Robbins, $\times 1$; FIG. 2, bud, $\times 1$, from topotype of *O. Tidestromi*; FIG. 3, ovary and portion of calyx, $\times 3$, from same plant as fig. 2.



Photo. B. G. Schubert

OENOTHERA CRUCIATA: FIG. 1, summit of plant, $\times 1$, from New Hampshire; FIG. 2, calyx, $\times 1$, from Maine; FIG. 3, same calyx, $\times 3$; FIG. 4, expanded flower, $\times 1$, from same plant as figs. 2 and 3; FIG. 5, capsule, $\times 1$, from New York; FIG. 6, same capsule, $\times 3$; FIG. 7, seeds, $\times 5$, from New Hampshire.

(sheet 484.3) is from an older plant, with well developed capsules subtended by long ascending bracts, the calyx-tips as in the earlier published *O. parviflora*. This is most fortunate, for no change of interpretation is necessitated.

Oenothera parviflora, then, is characterized by its free calyx-tips, with evident auricle which deflects the tip; by its obovate petals; its simple or rarely branching stem 1–8 dm. high; the foliage-leaves passing without obvious change into the bracts, which are prolonged and which persist on the leafy-bracted fruiting spike; and by the large (2–2.6 mm. long, 1–1.8 mm. broad) and plump seeds without any or with scarcely any thin wings.

The typical variety has the upper (often the lower) half of the stem beset with long spreading hairs, often on enlarged reddish pustular bases; the fresh leaves rather fleshy and firm, ascending, strigose to glabrescent beneath; calyx and capsule more or less strigose-villous. It abounds on gravelly shores, talus (often calcareous), sands and dry open soil from Newfoundland and the Côte Nord of Quebec to James Bay and the Thunder Bay District of Ontario, south to Nova Scotia, New England and New York. Var. *angustissima* (R. R. Gates) Wiegand in RHODORA, xxvi. 3 (1924), based on *Oenothera angustissima* R. R. Gates in RHODORA, xv. 46, pl. 100 and 101 (1913), differs in the stem, leaves, calyx and capsule being glabrous or essentially so (our PLATE 1139, FIGS. 4–6), thus paralleling *O. biennis*, var. *nutans* and, like it, chiefly Alleghenian, known from southwestern Quebec to western New York, south to the District of Columbia and West Virginia.

The third variety of *O. parviflora* is the chiefly coastal extreme with close and canescent, minute pubescence on stem, lower leaf-surfaces, backs of calyx-lobes and capsules, *O. Oakesiana* Robbins. This plant, with all the general characters of *O. parviflora* but with the auricle at summit of the calyx-lobes often longer and more conical than in typical *O. parviflora*, had a rather shaky nomenclatural start. Robbins sent a sheet of it (PLATE 1140, FIG. 1) to Asa Gray, with this label:

“*Oenothera Oakesiana*, sp. ined. Robbins

Annua, Oe. bienni minor; pubescentiâ molliore, adpressa; apicibus calycis divergentibus; caps. longiori, acutiori; seminibus majoribus.

Foliis insuper angustioribus, agrestum ad Norton, Mass. in arenosis, cultam ex seminibus ad Apponaug, R. I., lectis Aug., 1865 et legit ad New Haven, Conn., primum 1827."

Gray immediately took it up in his *Man.* ed. 5: 178 (1867) but as *O. biennis*, "Var. 5. OAKESIANA (OE. Oakesiana, Robbins)", Robbins's binomial thus published technically as a synonym. Sereno Watson did not do much better in his *Revision of the extra-tropical North American Species of the Genus Oenothera*, for there, in *Proc. Am. Acad.* viii. 579 (1873), under an all-inclusive *O. biennis*, he said: "The more strigose form is *OE. muricata*, Murr.; the more softly pubescent is *OE. Oakesiana*", without any author cited. In his *Bibliographical Index*, 383 (1878), however, the plant came into full recognition as "**OE. Oakesiana**. Robbins, in herb." with the two previously noted publications obscurely cited in the synonymy. But in these and later shifts of the name Robbins's noting of the two most significant characters, "apicibus calycis divergentibus" and "seminibus majoribus", was quite ignored. Robbins understood his plant; those who published it did not! In all its characters, except the cinereous and very fine pubescence, it is inseparable from *O. parviflora*. I am, therefore, calling it

O. PARVIFLORA L., var. **Oakesiana** (Robbins), comb. nov. *O. biennis*, var. *Oakesiana* (*O. Oakesiana* Robbins) Gray, *Man.* ed. 5: 178 (1867). *O. Oakesiana* as a binomial "form" of *O. biennis*, S. Wats. in *Proc. Am. Acad.* viii. 579 (1873). *O. Oakesiana* Robbins in herb. in S. Wats. *Bibl. Index*, 383 (1878). *O. Oakesiana* Robbins ex Wats. & Coult. in Gray, *Man.* ed. 6: 190 (1890). *Onagra Oakesiana* Britton in *Mem. Torr. Bot. Cl.* v. 233 (1894). *Oe. Tidestromii* Bartlett in *Cybele Columb.* i. 54, pl. 5 (1914).—Sands along the coast and rarely inland, Plymouth and Worcester Counties, Massachusetts, to Northampton County, Virginia. PLATE 1140.

The second species with the tips of the calyx-lobes deflected above the auricle and the seeds plump and relatively large is *O. cruciata* Nutt. in G. Don, *Syst.* ii. 686 (1832) or *O. biennis*, ϵ . *cruciata* (Nutt.) Torr. & Gray, *Fl. N. Am.* i. 492 (1840) (our PLATE 1139, FIG. 8, and PLATE 1141). Typical *O. cruciata* is habitally much like *O. biennis* and mostly with ascending branches, the cauline leaves membranaceous, acute and distant, leaving long reddish internodes exposed, minutely pilose beneath;

and the bracts quickly fall after the flowering, thus leaving long naked spikes of capsules. In these characters it would go with *O. biennis*; but its calyx-lobes are much as in *O. parviflora*, with tips free in the bud and in the expanded lobes deflected, the petals linear and only 1–3 mm. broad, the longest styles only up to 1.2 cm. long, and the seeds (PLATE 1141, FIG. 7) plump and as large as or larger than in *O. parviflora*. The typical plant, with villous-strigose stem, remote leaves and loosely spreading-villous calyx, is a very characteristic species, especially on gravelly beaches or bars of streams and ponds of a limited area: from southeastern and central Maine to northeastern New York, southward to Middlesex County, Massachusetts, Providence County, Rhode Island, and Hartford County, Connecticut. Quite isolated from the typical plant are two insular departures from it. The first is

O. CRUCIATA Nutt., var. **sabulonensis**, var. nov., TAB. 1142, caulibus 3–3.5 dm. altis simplicibus adpresse canescento-pilosis; foliis oblongis subobtusis plerumque 1.5–2.5 cm. latis subapproximatis subintegris; calycibus sparse minuteque pilosis; capsulis 8–10 mm. crassis laxe villosis.—NOVA SCOTIA: Sable Island, July 24, 1899, *John Macoun*, no. 21,193; edge of gully in sand-dunes, Sable Island, August 18, 1913, *St. John*, no. 1283 (TYPE in Herb. Gray.).

Var. *sabulonensis*, isolated by 300 miles from the eastern limit of typical *Oenothera cruciata* and with a stretch of 100 miles of sea separating it from the mainland, differs at once from the latter plant in its simple and low stems only 3–3.5 dm. high (in typical *O. cruciata* mostly branching and up to 1 m. high), approximate, instead of distant leaves, these bluntish, oblong and subentire (in typical *O. cruciata* lanceolate, acute and repand-denticulate); calyx minutely and sparsely pilose, instead of villous; capsule 8–10, instead of 5–7 mm. thick. Further material, especially with plenty of flowers and mature seeds, may show other departures.

On the islands of Nantucket and Martha's Vineyard, like Sable Island isolated remnants of the Cretaceous and Tertiary Coastal Plain, *Oenothera cruciata* is represented by

O. CRUCIATA Nutt., var. **stenopetala** (Bicknell), stat. nov., our PLATE 1143. *O. stenopetala* Bicknell in Bull. Torr. Bot. Cl. xli. 79 (1914).

Var. *stenopetala*, described in great detail by Bicknell, was considered by him to have "its real affinity . . . not with *O. cruciata*, a near-relative of *O. biennis*, but rather with *O. Oakesiana* with which it agrees closely in pubescence and to some extent in the form of the capsule". Perhaps so, but Bicknell's characterization of *O. cruciata* shows considerable unfamiliarity with that plant. His "bracts subtending the flowers [in *O. cruciata*] are broad based, not narrowly tapering or petiolulate" is unfortunate in view of the bracts of *O. cruciata* (summit of Nuttall's type in PLATE 1139, FIG. 8). The very narrow petals and the tendency to elongate branching (ISOTYPE in PLATE 1143, FIG. 1) seem to me to ally *O. stenopetala* with *O. cruciata*, but the question is far from settled. The plant is distinguished by its slender stem cinereous with crowded minute appressed pubescence; narrowly lanceolate or oblanceolate acute and repand-denticulate firm leaves only 0.4–1.5 cm. broad, these closely cinereous-strigose beneath; calyx and capsule similarly cinereous. As already noted, its status is still not wholly clear. It is an *Oenothera*!

O. TETRAGONA Roth, var. **hybrida** (Michx.), comb. nov. *O. hybrida* Michx. Fl. Bor.-Am. i. 225 (1803). *Kneiffia tetragona*, var. *hybrida* (Michx.) Pennell in Bull. Torr. Bot. Cl. xlv. 371 (1919). *O. tetragona*, var. *Fraseri* (Pursh) Munz, forma *hybrida* (Michx.) Munz in Bull. Torr. Bot. Cl. lxiv. 300 (1937).

O. TETRAGONA, var. **latifolia** (Rydb.), stat. nov. *Kneiffia latifolia* Rydb. in Torrey, xxvii. 86, pl. 3 (1927). *O. tetragona*, var. *Fraseri*, forma *latifolia* (Rydb.) Munz, l. c. 301 (1937).

Although Munz treats these two plants as mere forms of *Oenothera tetragona*, var. *Fraseri* (based on *O. Fraseri* Pursh, Fl. Am. Sept. ii. 734 (1814)), the first "Like var. *Fraseri* but with spreading hair on stems, leaf-veins, etc.", the second "Like var. *Fraseri*, but finely strigose", the differences seem to me more than direction and abundance of trichomes. *O. Fraseri* is glabrous throughout, apparently inseparable from *O. glauca* Michaux, Fl. Bor.-Am. i. 224 (1803), a photograph of the type before me; *O. Fraseri* (at least plants raised from Fraser's seeds) illustrated in Bot. Mag. xl. t. 1674 (1814), with citation of Pursh's description. *O. glauca* was well illustrated in Bot. Mag. xxxix. t. 1606 (1814). Not only is var. *Fraseri* glabrous; its oval to broadly ovate leaves are mostly 2–4 cm. broad, with only



Photo. B. G. Schubert

OENOTHERA CRUCIATA, var. SABULONENSIS, all figs. from TYPE: FIG. 1, upper half of plant, $\times 1$; FIG. 2, bud, $\times 1$; FIG. 3, same bud, $\times 3$.



Photo. B. G. Schubert

OENOTHERA CRUCIATA, var. STENOPETALA: FIG. 1, isotype, $\times 1$, of *O. stenopetala* Bicknell; FIG. 2, calyx, $\times 1$, FIG. 3, calyx, $\times 3$, and FIG. 4, expanded flower, $\times 1$, all from type-region, Nantucket Island, Massachusetts.

1–3 (rarely 4) low dentations per 2 cm. of margin, the leaves usually not subtending axillary fascicles; its petals 2–3 cm. long. It seems to be restricted to uplands of Virginia, West Virginia, possibly Ohio (Michaux's label of *O. glauca* reading: "Ouest de Ohio Route aux Illinois") and south along the mountains into western North Carolina and eastern Tennessee.

Vars. *hybrida* and *latifolia*, on the other hand, are both usually pubescent and both have lanceolate to narrowly lance-ovate leaves, the largest ones only 1–2 cm. broad (in the types of both 1 cm. broad), and their margins have 4–6 teeth per 2 cm.; in practically all specimens suppressed axillary branches or fascicles are abundant, and the petals may be as short as 1 cm. (not with a minimum of 2.5 cm.). Var. *hybrida*, characterized by spreading pubescence on stem, leaves, calyx and capsule, extends from the upland of Tennessee and North Carolina out to the inner margin of the Coastal Plain of Virginia. Var. *latifolia* extends from the mountains of eastern Tennessee and western North Carolina north into eastern West Virginia, northern Virginia (Clarke Co.) and southern Pennsylvania (Fayette and York Cos.). With narrower leaves, abundant axillary fascicles, development of pubescence, usually smaller petals and wider ranges eastward or northward, they are not satisfactorily treated as merely pubescent forms of var. *Fraseri*.

EXPLANATION OF PLATES 1137–1142

PLATE 1137. *OENOTHERA BIENNIS* L.: FIG. 1, portion of plant, $\times 1$, from dunes of the Ostfriesische Inseln, August 12, 1900, *Buchenau*; FIG. 2, calyx, $\times 1$, from Ile de Brion, Magdalen Islands, Quebec, *St. John*, no. 1937; FIG. 3, calyx, $\times 3$, from Sheffield, Massachusetts, June 15, 1919, *J. R. Churchill*; FIG. 4, expanded flower, $\times 1$, from same collection as fig. 3; FIG. 5, expanded flower, $\times 1$, from Cass Lake, Minnesota, *A. M. Johnson*, no. 3191; FIG. 6, seeds, $\times 5$, from Shelburne, New Hampshire, *A. H. Moore*, no. 4875.

O. BIENNIS, var. *NUTANS* (Atkinson & Bartlett) Wieg.: FIG. 7, calyx, $\times 3$, from south of Petersburg, Virginia, *Fernald & Long*, no. 9604; FIG. 8, expanded flower, $\times 1$, from no. 9604; FIG. 9, expanded flower from east of Corinth, Warren Co., New York, *House*, no. 28,028; FIG. 10, seeds, $\times 5$, from Garrett Co., Maryland, *Steele*, no. 94.

PLATE 1138. *OENOTHERA BIENNIS* L., var. *CANESCENS* Torr. & Gray: FIG. 1, calyx, $\times 1$, from Cherryfield, Saskatchewan, *Herriot*, no. 72,378; FIG. 2, calyx, $\times 1$, of ISOTYPE of *O. canovirens* Steele, from Concord, Morgan Co., Illinois, August 20, 1910, *Steele*; FIG. 3, calyx, $\times 3$, from same plant as fig. 2; FIG. 4, ovary and portion of calyx, $\times 3$, from Clay Co., Iowa, *Ada Hayden*, no. 10,084; FIG. 5, expanded flower, $\times 1$, from *Herriot*, no. 72,378; FIG. 6, seeds, $\times 5$, from Story Co., Iowa, August 15, 1933, *Ada Hayden*.

O. BIENNIS, var. *HIRSUTISSIMA* Gray: FIG. 7, calyx, $\times 1$, from Grand Teton National Park, Wyoming, *L. O. Williams*, no. 965; FIG. 8, expanded flower, $\times 1$, from New Plymouth, Idaho, *J. F. Macbride*, no. 733; FIG. 9, calyx, $\times 3$,

from *Williams*, no. 965; FIG. 10, seeds, $\times 5$, from Harrison Lake, Vancouver Island, *Carter*, no. 249.

O. ARGILLICOLA Mackenzie: FIG. 11, seeds, $\times 5$, from Sweet Springs, West Virginia, *Steele & Steele*, no. 328.

PLATE 1139. *OENOTHERA PARVIFLORA* L.: FIG. 1, calyx, $\times 1$, from Rivière à Pierre, Gaspé Co., Quebec, *Pease*, no. 20,303; FIG. 2, expanded flower, $\times 1$, from no. 20,303; FIG. 3, seeds, $\times 5$, from Cape Aylesbury, Prince Edward Island, *Fernald, Long & St. John*, no. 7835.

O. PARVIFLORA, var. *ANGUSTISSIMA* (R. R. Gates) Wieg.: FIG. 4, summit of plant, $\times 1$, from general type-area, Lansing, New York, *Eames & Wiegand*, no. 10,461; FIG. 5, calyx, $\times 1$, from same plant as fig. 4; FIG. 6, calyx, $\times 3$, from same plant as figs. 4 and 5.

O. PARVIFLORA, var. *OAKESIANA* (Robbins) Fernald: FIG. 7, seeds, $\times 5$, from Provincetown, Massachusetts, *Fernald & Long*, no. 18,845.

O. CRUCIATA Nutt.: FIG. 8, portion of TYPE in Herb. Brit. Mus., \times ca. $\frac{1}{2}$.

PLATE 1140. *OENOTHERA PARVIFLORA* L., var. *OAKESIANA* (Robbins) Fernald: FIG. 1, summit of TYPE, $\times 1$; FIG. 2, bud, $\times 1$, from TOPOTYPE of *O. Tidestromii* Bartlett, from Millstone Landing, St. Marys Co., Maryland, *Blake & Tidestrom*, no. 11,666; FIG. 3, ovary and portion of calyx, $\times 3$, from last specimen.

PLATE 1141. *OENOTHERA CRUCIATA* Nutt.: FIG. 1, summit of plant, $\times 1$, from Nelson, New Hampshire, July 9, 1932, *F. W. Batchelder*; FIG. 2, calyx, $\times 1$, from Lexington, Maine, *Fernald & Strong*, no. 445; FIG. 3, calyx, $\times 3$, from no. 445; FIG. 4, expanded flower, $\times 1$, from no. 445; FIG. 5, capsule, $\times 1$, from Granville, New York, *F. T. Pember*, no. 20; FIG. 6, same capsule, $\times 3$; FIG. 7, seeds, $\times 5$, from Rollinsford, New Hampshire, September 2, 1896, *Parlin*.

PLATE 1142. *OENOTHERA CRUCIATA* Nutt., var. *SABULONENSIS* Fernald, all figs. from TYPE: FIG. 1, upper half of plant, $\times 1$; FIG. 2, bud, $\times 1$; FIG. 3, bud, $\times 3$.

PLATE 1143. *OENOTHERA CRUCIATA* Nutt., var. *STENOPETALA* (Bicknell) Fernald: FIG. 1, ISOTYPE, $\times 1$, of *O. stenopetala* Bicknell, from Nantucket Island, Massachusetts, August 5, 1906, *Bicknell*; FIG. 2, calyx, $\times 1$, FIG. 3, calyx, $\times 3$, and FIG. 4, expanded flower, $\times 1$, all from Nantucket, August 18, 1917, *J. R. Churchill*.

4. EMENDATIONS IN THE ORDER TUBIFLORAE

(PLATES 1144 AND 1145)¹

CONVOLVULUS SPITHAMAEUS L., var. **pubescens** (Gray), comb. nov. *Calystegia sepium* (L.) R. Br., var. *pubescens* Gray, Man. ed. 5: 376 (1867). *Convolvulus sepium* L., var. *pubescens* (Gray) Fernald in *RHODORA*, x. 55 (1908), as to basonym only. *Calystegia Catesbeiana* Pursh, Fl. Am. Sept. ii. 729 (1814). *Convolvulus Catesbeianus* (Pursh) Ell., Sk. i. 255 (1817). *C. spithamaeus*, var. *Catesbeianus* (Pursh) Tryon in *RHODORA*, xli. 417 (1939).

Calystegia Catesbeiana Pursh was regularly misinterpreted as a variation of *Convolvulus sepium* L. until in 1939 I secured a photograph of Pursh's TYPE (see Tryon, l. c. pl. 557, fig. 3), when it became apparent that it is the densely pubescent and terminally

¹ The engraving of these plates made possible through a gift from Mr. BAYARD LONG.

elongate and often twining southern extreme of the white-flowered *Conv. spithameus*. Gray and everyone else was misled by Pursh's "*C. volubilis, tomentosa*" and his "Flowers large, purple" into supposing that Pursh had a very pubescent extreme of the regularly twining and, with us, oftenest roseate-flowered *Convolvulus sepium*. Consequently, although he had no material (see Tryon, l. c. 422), Gray, in publishing *Calystegia sepium*, var. *pubescens*, cited as an absolute synonym of it *C. Catesbeiana*. In his Man. ed. 5 the species of *Calystegia* were: 1. *C. sepium*; 2. *C. spithamea*. Under *C. sepium* with "the typical form glabrous throughout (*Convolvulus sepium*, and *C. repens*, L.)" Gray added

"Var. PUBESCENS is a downy form, in the young state approaching the next. (*C. Catesbyana Pursh.*)"

In other words, *Calystegia sepium*, var. *pubescens* was a renaming, as a variety, of *C. Catesbeiana* Pursh and it had no other basis. As the first varietal name used for the latter it must be taken up under the International Rules. The fact that later, in Syn. Fl. ii¹. 215 (1878), Gray, still not knowing Pursh's type, reduced his own *Calystegia sepium*, var. *pubescens* to his *Convolvulus sepium*, var. *repens* (L.) Gray² does not alter the situation, as Tryon, l. c. 422, assumed. Gray, in the Synoptical Flora also included, as a synonym of his inclusive var. *repens*, *Calystegia Catesbeiana* Pursh, for he still supposed it a variation of *Convolvulus sepium* with "herbage from minutely to tomentose-pubescent", "minutely" belonging to *Conv. repens* L., "tomentose-pubescent" to var. *pubescens* (*Calyst. Catesbeiana*). The same interpretation of *Calyst. sepium*, var. *pubescens* (i. e. *C. Catesbeiana*) was made when *Conv. sepium*, var. *pubescens* (Gray) Fernald was published in RHODORA, x. 55 (1908). It was not until we had the photograph of Pursh's type that we realized that his *Calystegia Catesbeiana* did not have "Flowers . . . purple" and that, in reality, it is the southern montane extreme of white-flowered *Convolvulus spithameus*. As the first varietal name for the plant, var. *pubescens*, clearly based on *Calystegia*

* Although the combination *Convolvulus sepium*, var. *repens* is regularly cited as starting with Gray, Syn. Fl. N. Am. ii¹. 215 (1878), it was earlier and properly published by Coleman in his Cat. Fl. Pl. So. Pen. Mich. (Kent Sci. Inst. Pub. no. 2), 30 (1874). Coleman should, therefore, be cited as author of the combination.

Catesbeiana, must stand, unless some earlier varietal name for it is found. The name *Conv. spithamaeus*, var. *Catesbeianus* has great merit and is historically clarifying but it is a later varietal name.

CONVOLVULUS SEPIUM L., forma **malachophyllus**, f. nov., foliis cordato-ovatis plerumque 3.5–4 cm. latis utrinque velutino-pilosis; caule pedunculis bracteisque tomentulosis; corollis roseis.—TYPE from Wickford, RHODE ISLAND, June 17, 1908, *E. F. Williams* in Herb. Gray.

The type, along with several other specimens from a broad area—Anticosti Island to Illinois, Missouri and New Jersey—was distributed as *Convolvulus sepium*, var. *pubescens* (Gray) Fernald; but, as explained in the discussion of *C. spithamaeus*, var. *pubescens*, the nomenclatural basis of that name was badly confused. Forma *malachophyllus* is the very pubescent extreme, allied to *C. sepium*, forma *coloratus* Lange, the roseate-flowered color-form (including var. *americanus* Sims and var. *communis* Tryon) which in America is more frequent than typical white-flowered *C. sepium*, the latter in Europe more common than the roseate-flowered. In view of the fact that approximately 50% of the Eurasian material, there regularly treated as true *C. sepium*, has the leaf of var. *americanus* Sims, as treated by Tryon in RHODORA, xli. 420 (1939), while the other half of the specimens from Eurasia have the leaf of var. *communis* Tryon, l. c. 419, and many American specimens show both types of leaf on the same plant, I have reluctantly given up the effort to keep them apart. I am, however, maintaining var. *fraterniflorus* Mackenzie & Bush as a good geographic variety, not because it has a white corolla, but because the leaf-sinus is distinctive. In all Eurasian material before me (except 1 sheet) and in all American, except for var. *fraterniflorus*, the sinus is U- or V-shaped, with sloping sides. In var. *fraterniflorus*, occurring from Pennsylvania to North Dakota, south to Virginia, Kentucky and Arkansas, all well displayed leaves show a strongly quadrate or nearly square sinus, with parallel sides.¹ This character seems very real. It reappears in a single sheet from Nippon, *Kakuo Uno*, no. 24,144, collected August 17, 1939. From this specimen

¹ Unfortunately the leaf from a topotype shown by Tryon, l. c. pl. 558, fig. 6, has both basal lobes with inner margins folded back, thus obscuring the quadrate sinus.

the familiar range, temperate eastern North America and temperate eastern Asia, is indicated. The sheet from Nippon was distributed as *Calystegia subvolubilis* G. Don, Gen. Syst. iv. 296 (1838), which was a mere transfer of *Convolvulus subvolubilis* Ledeb. Fl. Alt. i. 222 (1829) and Icon. iii. 6, tab. 205 (1831); but *Conv. subvolubilis*, from Dahuria, is wholly different.

Another very striking variety of *Convolvulus sepium* is locally naturalized in western Nova Scotia. Typical *C. sepium* has the leaves acute or acutish and longer than broad, the ovate acute or acutish paired bracts 2–3.5 cm. long, and the white or roseate corolla 4.5–8 cm. high. In western Nova Scotia there also occurs an extreme with suborbicular to round-ovate leaves with blunt to rounded apex, the bracts blunt or round-tipped and only 1.5–2 cm. long, and the white corolla only 4–4.5 cm. high. This seems to be the local Dalmatian var. *dumetorum* Pospichal, Fl. Oesterreich. Küstenlandes, ii. 490 (1898). The two collections are as follows, both from Nova Scotia and distributed as *C. sepium*: roadsides, waste places and ballast-lands, Yarmouth, July 24, 1920, Long & Linder, no. 22,326; near a house, grassy or bushy roadsides, Barrington, Fernald, Long & Linder, no. 22,327. This variety, occurring near ports, evidently came in shipping from the Adriatic.

CONVOLVULUS PELLITUS Ledeb., forma **anestius**, stat. et nom. nov. *Calystegia pubescens* Lindl. in Journ. Roy. Hort. Soc. i. 70, with fig. (1846); *Convolvulus pubescens* (Lindl.) Thellung in Viertelj. Naturf. Ges. Zurich, lii. 459 (1907), not *Conv. pubescens* Willd. (1809). *Volvulus japonicus* (Thunb.) Farwell, var. *pubescens* (Lindl.) Farwell in Am. Midl. Nat. xii. 130 (1930).

Convolvulus pellitus, forma *anestius* is the weedy double-flowered plant which has erroneously passed as a form of *C. japonicus* Thunb. That plant (the *Calystegia japonica* (Thunb.) Choisy or *Calysteg. sepium* (L.) R. Br., var. *japonica* (Thunb.) Makino) is, as Dr. Hiroshi Hara clearly demonstrated to me when he spent two years at the Gray Herbarium, wholly different: glabrous, with much longer leaves with 10 to 12 pairs of evident lateral veins, longer bracts up to 3 cm. long and with cordate bases, and the corolla as large as in *Conv. sepium* L. *C. pellitus* Ledeb. Fl. Alt. i. 223 (1829) and Icones, iii. 6, t. 206 (1831) and its double-flowered forma *anestius*, on the other hand, have the

stems and leaves densely soft-pubescent; the subtruncate-based leaves much smaller and with only 3-6 pairs of evident lateral veins; the bracts 1-2.5 cm. long and only gradually rounded (not cordate) at base; the corolla only 4-4.5 cm. high. Typical *Conv. pellitus* with normal simple corolla is rare with us as a weed; the only specimen I have seen (from Massachusetts) coming from an area where waste from woolen-mills abounds. It could have had a quite different origin with us from the common double-flowered plant.

The latter was first noted, apparently, when Lindley described and illustrated it as *Calystegia pubescens* in 1846, Lindley saying:

"Raised from a very small portion of the root found in a dead Paeony root, in Box No. 22, from Mr. Fortune's mission in China. The box was sent from Shanghai, and stated to contain a plant of the double Convolvulus, which was supposed to be dead when received at the Garden in June, 1844.

This curious plant approaches very nearly to the *C. sepium* or larger bindweed of our English hedges, from which it differs in having firmer and smaller leaves, much narrower bracts, and a fine pubescence spread over every part. It is the first plant of its order that has been mentioned as producing double flowers. They are about as large as those of a double Anemone, but the petals are arranged with the irregularity of the Rose; they are of a pale very delicate pink, and remain expanded for some days. The calyx is quite unchanged. The exterior petals are very much lacerated and irregular in form; those next the centre are narrow, drawn together into a kind of cone; the next central are completely concealed by those without them, and diminish until they are mere scales, analogous to those which may be found in the first buds which burst in the spring. Not a trace can be found of stamens or pistil."

The same year Lindley essentially reproduced his first account and published a colored plate in Bot. Reg. xxxii. t. 42 (1846), this plate and the account repeated by others. Comparison of Lindley's description and plate with Ledebour's account and beautiful plate of *Convolvulus pellitus* indicates that they are of the same species. However, *Index Kewensis* tells us that *Calystegia* "pubescens, Lindl. . . . = hederacea". *Calystegia hederacea* of Wallich, Cat. was a mere nomen but the Wallich material so named was the basis of *Convolvulus Wallichianus* Spreng. Syst. iv. Cur. Post. 61 (1827), not *Conv. hederaceus* L. (1753). But, obviously, *Conv. Wallichianus* had nothing in common with *Calyst. pubescens* Lindl. The former is very slender and quite glabrous ("utrinque glabris"—Spreng. instead

of “villosus”—Ledeb.), with petioles one half to quite as long as the membranaceous leaf-blade (instead of many times shorter than the firm and thick blade); the broadly hastate base three fourths as broad as to broader than (instead of one third to one half as broad) length of blade; the corolla much shorter.

Convolvulus pellitus, forma *anestius* (homeless) must have been much more in cultivation in the past than at present in the United States. Otherwise it would be most difficult to account for its appearance and spread in abandoned or fallow fields or waste places, on roadsides, etc.; for, producing no seed, it must depend on the unusual vigor (see Lindley's comment) of the slender subterranean parts for propagation. In the Gray Herbarium and that of the New England Botanical Club 37 different stations, all the way from eastern Maine to Michigan, Missouri and Tennessee, are represented, the earliest collection made in 1877, the latest in 1943.

IPOMOEA PANDURATA (L.) G. F. W. Meyer, forma **leviuscula**, nom. nov. Var. *rubescens* Choisy in DC. Prodr. ix. 381 (1845).

In RHODORA, xx. 65 (1918) Blake pointed out that the TYPE of *Convolvulus panduratus* L., therefore of *Ipomoea pandurata*, is the pubescent-leaved form and that, consequently, the “form with leaves glabrous beneath” is Choisy's var. *rubescens*. Choisy's adjective was unfortunate, for both plants have the stem commonly reddish, but he said “caule rubescente glaberrimo ut et foliis”. The glabrous and pubescent forms grow somewhat interchangeably in the same areas, so that one may gather material in the same region (southeastern Virginia for example) of either of them. They do not have the geographic segregation one expects of true geographic varieties. I refrain from taking up for a form which differs from the typical plant in its lack of pubescence, the name given it as a variety, since that name is equally descriptive of both forms and, from my viewpoint, would be an absurdity. This case is another to add to those presented by Fassett in RHODORA, l. 249 (1948). Under the wise provision of the International Rules as they have stood for some decades there is no obligation to take over into a new category a name from another category when it would be wholly misleading. Art. 4 of the Rules specially urges us “to avoid or

to reject the use of . . . names which may cause error or ambiguity or throw science into confusion”.

A NEW POLEMONIUM FROM EASTERN PENNSYLVANIA (PLATES 1144 AND 1145).—When in 1892 the late Dr. Britton described the localized *Polemonium Van-Bruntiae* Britton in Bull. Torr. Bot. Cl. xix. 224, pl. 131 (1892) it came as a surprise that in the woodlands of the Atlantic States there was a species so distinct from the much commoner *P. reptans* L. Now that *P. Van-Bruntiae* is well known at scattered spots all the way from western Vermont and New York to the upland of West Virginia¹, Mr. Bayard Long comes forward with another endemic, as yet known only in one limited area of alluvial woods in Montgomery County, Pennsylvania. Growing with the common blue-flowered *P. reptans*, the new plant is strikingly unlike it in many characters. Some years ago Mr. Long referred the plant to me for description, but in deference to others who work primarily on the *Polemoniaceae* I, naturally, refrained from entering polemics over a genus said by some to be named for Polemon of Athens, a Greek philosopher, but by Pliny said to come from *polemos* (war). Now, however, since two specialists on the group have definitely labeled the new plant *P. reptans*, I no longer feel it necessary to withhold publication.

Polemonium reptans (PLATE 1145, FIG. 1), many times illustrated, has the thinnish middle and upper cauline leaves with acute or acutish leaflets; corolla deep blue, 1–1.6 cm. high, completely overtopping the stamens; the style included or barely exserted; the calyx-lobes lanceolate to lance-triangular and acute or acutish. *P. Longii* (PLATE 1144), on the other hand, has the thick oblong or oblong-oval leaflets obtuse and often bluntly lobulate toward the summit; the calyx-lobes bluntish and broader; corolla red-purple, 7–8 mm. high, much exceeded by the stamens, the style obsolete.

In its long-exserted stamens *Polemonium Longii* is, perhaps, more nearly allied to *P. Van-Bruntiae* (PLATE 1145, FIGS. 2 and

¹ The old-fashioned Jacob's-ladder of gardens, *Polemonium caeruleum* L., brought to our gardens from Europe, is occasional in waste and I find specimens of it from so far away from Vermont as rubbish-heaps of Gaspé Co., Quebec, and identified incorrectly by specialists on the group as *P. Van-Bruntiae*! Other perfectly typical *P. caeruleum*, derived from gardens in New Hampshire and originally with correct identifications, has twice been incorrectly annotated as *P. reptans*.



Photo. B. G. Schubert

POLEMONIUM LONGII, all figs. from TYPE: FIGS. 1 and 2, portions of inflorescence, \times ca. 1; FIG. 3, cauline leaf, \times ca. 1; FIG. 4, flowers, \times 3; FIG. 5, calyces, \times 3.



Photo. B. G. Schubert

POLEMONIUM REPTANS: FIG. 1, inflorescence and upper leaves, $\times 1$, from western New York.

P. VAN-BRUNTIAE: FIGS. 2 and 3, inflorescence and cauline leaves, $\times 1$, from eastern New York.

3), but it differs from that species as much as it does from *P. reptans*. *P. Van-Bruntiae* has the leaflets tapering to acute or acuminate tips; those of *P. Longii* are obtuse and often lobulate. The corollas of *P. Van-Bruntiae* are blue-purple and 1.2–1.5 cm. long, those of *P. Longii* red-purple and only 7–8 mm. high. During anthesis the calyx of *P. Van-Bruntiae* is 8–12 mm. long, that of *P. Longii* 5–6 mm. long and with blunter and shorter lobes; the anthers of *P. Van-Bruntiae* are 1.8–3 mm. long, the rounder anthers of *P. Longii* 1–1.3 mm. long. In *P. Van-Bruntiae* the style is always exserted 3–10 mm., in *P. Longii* obsolete.

In any other genus such characters are specific. Surely, if *Polemonium Longii* is only *P. reptans* with every character different, it is useless to consider the recognition of specific differences in the family (in *Phlox* for example). The fact that it occurred with *P. reptans* is not an argument that it is that species. When *P. Van-Bruntiae* chooses a similar habitat we do not call it also *P. reptans*; nor, simply because they both live in Philadelphia and work at the same institution do we consider the discoverer of *Polemonium Longii* identical with the most prolific writer on that group. It is, of course, unfortunate that all the material of the newly proposed species was collected at a single station twenty-three years ago and the type-station later destroyed. Now that attention is called to it and its distinctive characters illustrated many keen botanists will be on the look-out for it. With this possibly polemical introduction I venture to describe

POLEMONIUM Longii, sp. nov., TAB. 1144, a *P. reptante* differt foliis crassioribus, foliolis oblongis vel oblongo-ovalibus obtusis plerumque ad apicem 2–3 lobulatis; calycibus 5–6 mm. longis lobis late deltoideis; corollis roseo-purpureis 7–8 mm. longis; staminibus valde exsertis, antheris reniformi-globosis 1–1.3 mm. longis; stylo obsoleto.—Montgomery County, PENNSYLVANIA: alluvial woods along Wissahickon Creek, west of Fort Washington, May 17, 1925, *Bayard Long*, no. 32,357 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.).

In PLATE 1144 all figures are from the TYPE of **POLEMONIUM LONGII**: FIGS. 1 and 2, portions of inflorescence, \times ca. 1; FIG. 3, cauline leaf, \times ca. 1; FIG. 4, flowers, \times 3; FIG. 5, calyces, \times 3.

In PLATE 1145 FIG. 1 shows an inflorescence and upper leaves, \times 1, of *P. REPTANS* L. from along Cattaraugus Creek, Collins, Erie County, New York, *Anne E. Perkins*, no. 68; FIGS. 2 and 3, an inflorescence and cauline leaves,

× 1, of *P. VAN-BRUNTIAE* Britton, from vicinity of North Harpersfield, Delaware County, New York, *Topping*, no. 182.

PHLOX NIVALIS Lodd. ex Sweet, forma **roseiflora**, f. nov., corollis roseo-purpureis.—TYPE from open dry sandy woods near North, Orangeburg County, SOUTH CAROLINA, April 20, 1932, *Weatherby*, no. 6109 in Herb. Gray. Other material represented from Virginia to Florida and Alabama.

Typical *Phlox nivalis*, as the name implies and as shown in the original plate of Loddiges, has the corolla white. All colonies we have seen in southeastern Virginia (5 stations in Nansemond, Southampton and Greenville Counties) have consistently rose-purple or magenta corollas and some specimens from North Carolina, South Carolina, Florida and Alabama show in the dry material lingering purple or deep rose in the fading flowers or have memoranda recording such color. This difference of color of the fresh flowers is so striking that to those who know the Virginian plant in the field the specific name seems quite inappropriate. If one were after material for a rockery, it would be desirable to know whether the flowers are white or magenta!

P. SUBULATA L., var. *BRITTONII* (Small) Wherry, forma **australis** (Wherry), stat. nov. *P. subulata australis*, "var. nov.", Wherry in *Bartonia*, no. 11: 27 (1929).

In parallel columns on the same page Wherry published *Phlox subulata australis* as a variety with "COROLLA NORMALLY DEEP PURPLE" and *P. subulata brittonii*, based on *P. Brittonii* Small in Bull. Torr. Bot. Cl. xxvii. 279 (1900), this with "COROLLA NORMALLY LAVENDER WHITE" and with very slight stated differences in measurements; both from the southern Appalachians. They seem to be color-forms rather than true geographic varieties and I am maintaining for the inclusive variety the earliest trivial name given these plants, Small's description and comparative notes being remarkably clear and to the point.

P. BIFIDA Beck, var. **cedaria** (Brand), comb. nov. *P. Stellaria* Gray in Proc. Am. Acad. viii. 252 (1870). *P. Stellaria*, var. b. *cedaria* Brand in Engler, Pflanzenr. iv²⁵⁰. 75 (1907). *P. bifida stellaria* (Gray) Wherry in *Bartonia*, no. 11: 34 (1929).

The glabrous or glabrescent and nonglandular mostly more southern variety of *Phlox bifida* was originally described from "Cliffs of Kentucky River (probably above Lexington), in the

fissures of the most precipitous rocks', found only by the late Dr. Short, May 1, 1829 . . . Named from the resemblance to a *Stellaria* both in foliage and blossoms". Wherefore, since Brand regularly capitalized the initial letter of substantives used as specific names (*Gilia Sonorae*, "Im Staate S o n o r a", and *G. Jassajarae* Brand from "Jassajara Hot Springs") it is probable that he did not consult Gray's original account of *P. Stellaria*, for he treated the specific name as an adjective and incorrectly (by the rule he followed) decapitalized it. His *P. Stellaria*, var. *cedaria* was based upon Gattinger's material from Tennessee: "Cedar Barrens bei Lanergie? (Gattinger)", the query because he could not read Gattinger's LAVERGNE, which is clearly written on the labels of two fine sheets in the Gray Herbarium.

Brand evidently saw very inadequate or meagre material from Lavergne, for his description indicated the short leaves of the flowering shoots only, rather than the much longer leaves of the well developed vegetative branches:

"Var. b. **cedaria** Brand. n. var. Folia 10–20 mm longa. Calyx et pedicelli glabriusculi.

"Tennessee: Cedar Barrens bei Lanergie? (Gattinger, Herb. München.)"

One of the Gattinger sheets in the Gray Herbarium, no. 2150, coll. May 1, 1880, is of a small piece with three flowering branches on which the leaves are 0.8–1.5 cm. long, while the sterile leafy branches have them up to 3 cm. long. The other, a very large specimen covering the herbarium-sheet and bearing detailed notes by Gattinger, is similar but a very full specimen, collected June 21, 1880. The leaves of the flowering branches are as in the smaller piece, some of those of the vegetative shoots up to 4.5 or 5 cm. long.

Wherry, l. c., 29, discussing the inclusive *Phlox bifida*, quickly disposed of var. *cedaria*, saying "Brand's supposed variety, *P. stellaria cedaria*, is still less acceptable, being based on a specimen from which mature leaves had evidently been broken off [or were not represented]". Therefore, by his reasoning, although the glabrescent and nonglandular *P. Stellaria*, var. *cedaria* was on p. 29 "Brand's supposed variety", on p. 34 it was one of the "varieties which exhibit sufficient geographic segregation to deserve nomenclatorial treatment" and we find the combination

"**Phlox bifida stellaria** (Gray) Wherry, comb. nov." based on *P. Stellaria* Gray (1870); but, whereas Gray's TYPE and only cited specimen was "found only by the late Dr. Short, May 1, 1829", the plant is by Wherry now "Typified by a specimen collected at Camp Nelson, Jessamine Co., Ky., by E. T. W. April 11, 1928". The International Rules of Botanical Nomenclature are definite: we cannot reject the earliest varietal name for a variety and substitute for it an older name which was published only as specific. By the Rules the combination *P. bifida*, var. *cedaria* stands.

P. DIVARICATA L., forma **Coulteri**, f. nov. Unnamed but defined form of Watson & Coulter in Gray, Man. ed. 6: 355 (1890).

This very remarkable plant was sent to the late Sereno Watson by Dr. John M. Coulter with the accompanying letter:

Crawfordsville, Ind., May 22, '89

Dear Mr. Watson:

Here's a specimen we collected near here the other day. We found quite a patch of it, but most of it past season. It infests a dry, rocky glacial ridge. It is evidently *Phlox*, but I can't find that it has been described.

Yrs. as always

John M. Coulter.

Watson evidently asked why it is not *Phlox divaricata*, for Coulter's reply was as follows:

Crawfordsville, Ind.—

May 30, '89

Dear Mr. Watson:

Yes, we have plenty of *Phlox divaricata* growing all about us, & are perfectly familiar with it. The plant sent you has exactly the foliage cut of *P. divaricata*, but the flowers are so very different. They are very much smaller, & the remarkable abrupt acumination of the petals is unlike any *Phlox* I ever saw. In *P. divaricata* the petals are broad and notched, or sometimes entire in var. *Laphamii*. Another point in the case is that this is not a single isolated specimen, but there was a large area covered by these plants, all with the same characters. To me the plant looks like a pretty sharp variety of *P. divaricata*.

Yrs. as always,

John M. Coulter

As noted above, Watson & Coulter described this plant as an unnamed form the next year. Wherry in *Bartonia*, no. 12: 34 (1931), noted it as a form, "**Long-acuminate-lobed**", as dom-

inant near Crawfordsville "and widely known as the 'Crawfordsville form'"; just how "widely known" is not clear. At least, Deam in his *Flora of Indiana* did not mention it.

On the same page Wherry correctly noted the albino as *Phlox divaricata*, forma *albiflora* Farwell. Subsequently, however, he wrote in *Bartonia*, no. 16: 40 (1938): "In discussing white forms . . . one name was overlooked: *P. d. candida* Wetzstein. This has priority over *albiflora*, although whether it represented a pallid or an albino plant is not known". The unwary might, from this, think that Wetzstein's name should invalidate the properly defined *P. divaricata*, forma *albiflora* Farwell in Rep. Mich. Acad. Sci. xxi. 369 (1920). But, what Wherry does not bring out, is that *P. divaricata candida* Wetzstein in Proc. Ohio State Acad. Sci. iv. 361 (1906) was a *nomen nudum*, without a single word of description and, therefore, has no status whatever in nomenclature.

P. MACULATA L., forma **immaculata**, f. nov., a *P. maculata* differt caule immaculato; corollis albidis. TYPE: with the abundant purple-flowered plant in an open swamp, Fairfield, Connecticut, July 11, 1902, *E. H. Eames*, no. 180ac, in Herb. Gray.

Forma *immaculata* is the form of ordinarily spotted-stemmed and purple-flowered typical northern *Phlox maculata* in which the purple of stem and corolla are lacking, the stem being green, the corolla white. Specimens are before me from Connecticut and New York.

Brand in Engler, *Pflanzenr.* iv²⁵⁰. 60 (1907) makes *P. suaveolens* Ait. Hort. Kew. i. 206 (1789) the nomenclatural basis for all white-flowered plants of the inclusive species, whether northern or southern, without differentiation, he calling them *P. maculata*, var. b. *suaveolens* (Ait.) Brand and citing also the *P. suaveolens* of Pers. Syn. i. 186 (1805), which was largely the *P. maculata*, var. *candida* Michx. of "Virginia, Carolina", therefore not the few-leaved and relatively low northern plant; and also *P. suaveolens* sensu Ell. Sk. i. 244 (1817), described from Savannah, Georgia (and on the outermost Coastal Plain), 250 miles south of the southern (Piedmont and Alleghenian) limit assigned by Wherry to any form of *P. maculata*. Brand also cited, under his all-inclusive var. *suaveolens*, *P. alba* Moench, Meth. Suppl.

173 (1802) but that was a substitute for *P. suaveolens*. *P. maculata* β . *candida* Michx. Fl. Bor.-Am. i. 143 (1803) was also cited but that belongs to the many-leaved southern variety, Michaux citing it from "Virginia, Carolina". In view of the fact that we do not know just what Aiton had before him as *P. suaveolens*, a cultivated plant, it would be very unwise to use that much misinterpreted name for a color-form of the wholly northern plant.

P. MACULATA L., var. *PURPUREA* Michx., forma **candida** (Michx.), stat. nov. *P. maculata*, β . *candida* Michx. Fl. Bor.-Am. i. 143 (1803).

I am retaining the first varietal name, properly defined, for the southern tall, many-leaved and more uniformly leafy variety of *P. maculata* which is called var. *pyramidalis* (Smith) Wherry in *Bartonia*, no. 14: 26 (1932), this based on the binomial *P. pyramidalis* Smith, *Exot. Bot.* ii. 55, pl. 87 (1806). Since Michaux had already given a clearly defined name for the variety that stands under the International Rules.

PHYSALIS BARBADENSIS Jacq., var. **glabra** (Michx.), comb. nov. *P. obscura* Michx., var. α . *glabra* Michx. Fl. Bor.-Am. i. 149 (1803). *P. barbadensis obscura* (Michx.) Rydb. in *Mem. Torr. Bot. Cl.* iv. no. 5: 327 (1896).

Michaux's *Physalis obscura* was immediately broken into two varieties: "Var. α . *glabra*: summitatibus et petiolis vix perceptibili pube"; and "— β . *viscido-pubescens*". The latter is perhaps the viscid-villous or -pilose typical *P. barbadensis*, while var. α . *glabra* is the glabrous or glabrescent variety (photograph of the type before me). As the first varietal name it supersedes var. *obscura* (1896) and the two are obviously the same plant.

CHAMAESARACHA grandiflora (Hook.), comb. nov. *Physalis grandiflora* Hook. Fl. Bor.-Am. ii. 90 (1834). *Leucophysalis grandiflora* (Hook.) Rydb. in *Mem. Torr. Bot. Cl.* iv. 366 (1896).

Leucophysalis was treated by Rydberg as a monotypic genus of the Canadian to Hudsonian area of eastern North America, but Dr. Armando Hunziker kindly calls my attention to the fact that it closely resembles similarly white-flowered plants of China and the Andean region; however, he is not ready to separate it from

inclusive *Physalis*. In the close and scarcely reticulate fruiting calyx, the rotate white corolla and some other points it seems to be too near to *Chamaesaracha*. The removal of this species (and some others) from *Physalis* would clarify the generic lines. Otherwise, *Physalis*, passing into *Chamaesaracha*, would be as cumbersome as *Aster* would become if we followed Otto Kuntze and placed in it the large and chiefly North American genus *Solidago*.

PENSTEMON TUBAEFLORUS Nutt., var. **achoreus**, var. nov., a var. typica recedit caule tenuiore 0.6–1 m. alto; foliis coriaceis, majoribus 1–2.5 cm. latis plerumque subacuminatis; cymulis inferioribus longe pedunculatis pedunculo 1.5–8 cm. longo.—Dry old fields, pastures, etc., New England and Ontario, south to Pennsylvania. TYPE from Aroostook County, MAINE: well established in a dry open field near cemetery, Fort Fairfield, July 17, 1939, G. D. Chamberlain in Herb. Gray.

True *Penstemon tubaeiflorus* Nutt., occurring from Nebraska to eastern Texas, eastward to Mississippi, Tennessee, Indiana and Wisconsin, and slightly adventive to the Atlantic states, has 2–4 pairs of principal cauline leaves distant, submembranaceous and the larger ones 2–4 cm. broad and blunt to subacute, the lower cymules on peduncles only 0.2–1.5 (rarely –3) cm. long. The plant rather generally naturalized in New England and adjacent areas, although with the floral characters of *P. tubaeiflorus*, is more slender and usually taller (0.6–1 m. high); its leaves are coriaceous, the pairs less distant, the larger cauline ones only 1–2.5 cm. broad and usually more acuminate; and the lower cymules are on peduncles 1.5–8 cm. long. This plant, var. *achoreus* (without a native land), was established in Maine as early as 1881 and it is now in many old fields throughout much of New England. It has evidently come in from farther west, but its native region is unknown.

P. CANESCENS Britt., forma **villicaulis**, f. nov., internodiis longe villosis.—Occasional in Virginia. TYPE: Fauquier Co., VIRGINIA: top of Oventop Mt., June 13, 1937, Allard, no. 3001 in Herb. Gray.

Typical *Penstemon canescens* has the internodes closely cinereous-puberulent; forma *villicaulis* has the stem from base into the inflorescence covered with elongate villi.

P. CANESCENS Britt., forma **Brittonorum** (Pennell), stat. nov. *P. Brittonorum* Pennell in Small, Man. Se. Fl. 1204, 1508 (1933). *P. canescens brittonorum* (Pennell) Pennell in Acad. Nat. Sci. Phila. Mon. i. 222 (1935).

P. BREVISEPALUS Pennell, forma **heterolasius**, f. nov., internodiis inferioribus puberulentis villis elongatis intermixtis.—Scattered through the range of the typical form. TYPE from Nelson Co., TENNESSEE: open roadside bank west of Belltown, May 22, 1933, *C. A. and Una F. Weatherby*, no. 6373, in Herb. Gray.

In typical *Penstemon brevisepalus* the lower internodes are closely puberulent; in forma *heterolasius* abundant long villi are intermixed.

P. AUSTRALIS Small, forma **odontophyllus**, f. nov., foliis rosulatis crenato-dentatis, caulinis valde duplicato-serratis.—Nansemond Co., VIRGINIA: white sand of pine and oak woods and clearings near Cathole Landing, west of Factory Hill, July 18, 1944, *Fernald & Long*, no. 12,468 (TYPE in Herb. Gray.).

Typical *Penstemon australis*, abundant and usually essentially unvarying in the sandy pinelands and oak woods of southeastern Virginia, has the radical leaves entire or nearly so, as are the cauline ones. Forma *odontophyllus*, known from a single station only, has the rosette-leaves regularly crenate-dentate and the cauline ones abundantly and somewhat doubly serrate-dentate. It is known only in overripe fruit. Younger material may show other characters.

GRATIOLA NEGLECTA Torr., var. **glaberrima** (Fern.), comb. nov. *G. lutea* Raf., var. *glaberrima* Fern. in RHODORA, xxxiv. 149 (1932).

GERARDIA, subgen. **Eugerardia** (Benth.), stat. nov. Sect. *Eugerardia* Benth. in Hook. Comp. Bot. Mag. i. 206 (1836).

GERARDIA, subgen. **Otophylla** (Benth.), stat. nov. Sect. *Otophylla* Benth. l. c. 205 (1836).

GERARDIA, subgen. **Panctenis** (Raf.), comb. nov. *Panctenis* Raf. New Fl. ii. 60 (1837). *Aureolaria*, subgen. *Panctenis* (Raf.) Pennell in Bull. Torr. Bot. Cl. xl. 408 (1913).

G. GRANDIFLORA Benth., var. **pulchra** (Pennell), comb. nov. *Aureolaria grandiflora* (Benth.) Pennell, var. *pulchra* Pennell in Proc. Acad. Nat. Sci. Phila. lxxx. 392 (1928).

G. FLAVA L., var. **macrantha** (Pennell), comb. nov. *Aureolaria flava*, var. *macrantha* Pennell in Proc. Acad. Nat. Sci. Phila. lxxiii. 511 (1922).

G. calycosa (Mackenz. & Bush), comb. nov. *Dasystoma calycosa* Mackenz. & Bush in Rep. Mo. Bot. Gard. xvi. 105 (1905).

G. PEDICULARIA L., var. **intercedens** (Pennell), comb. nov.
Aureolaria pedicularia (L.) Raf., var. *intercedens* Pennell in
Torreya, xix. 207 (1919).

G. PEDICULARIA L., var. **austromontana** (Pennell), comb. nov.
Aureolaria pedicularia (L.) Raf., var. *austromontana* Pennell in
Proc. Acad. Nat. Sci. Phila. lxxi. 268 (1920).

(To be continued)

THE STATUS OF *HICORIA BOREALIS* ASHE

WAYNE E. MANNING

In 1896 W. W. Ashe described *Hicoria borealis* in an obscure pamphlet (Notes on Hickories, 1896) as follows:

"Hicoria Rafinesque.

The shag- or scaly-bark Hickories—Bud scales 10 to 12, accrescent and persistent during leafing; nuts angled, white or mealy; leaflets 3 to 7; bark of trunk usually shaggy.

(a) Fruit . . . [*H. ovata* and *H. carolinae-septentrionalis*]

(b) Fruit rarely globular; husks thin, not splitting to the base, and usually not freeing the nut; nuts more or less angled and pointed.

H. borealis sp. nov. Fruit flattened, .5 inch long; husk thin, not splitting; nut white, sharply angled, kernel very large; leaflets 3 to 5, oblong-lanceolate, smooth, not dotted beneath with resinous globules. Region of the Great Lakes."

N. L. Britton in his Manual of the Flora of the Northern States and Canada (1901), in Britton and Shafer, Trees of North America (1908), and in Britton and Brown, Illustrated Flora of the Northern States and Canada, second edition (1913), gives a fuller description; C. S. Sargent in Trees and Shrubs (1913) and in Notes on North American Trees. II. *Carya* (Botanical Gazette 66: 246, 1918) changed the species to a variety of *Carya ovalis*.

The descriptions by Ashe, Britton, and Sargent do not agree. The original description describes the tree as having extremely small fruit and smooth leaflets, the description by Britton indicates a somewhat larger fruit, and Sargent stresses the hairy twigs and rachises.

After a careful study of all specimens available, the writer

believes that the plant is related to the shag-bark hickory, *Carya ovata*, or might even represent a hybrid between *C. ovata* and either *C. glabra* or *C. ovalis*.

The following collections are the total in the New York Botanical Garden and the Arnold Arboretum:

O. A. Farwell 1354, Belle Isle (Detroit River), Mich., May 31, 1893 (N. Y.), the label being that of Ashe, with "Plants of Southern U. S., W. W. Ashe" marked out, and "no. 1354 Herb. Farwell" inserted; at bottom of label marked: number 3049 Herb. W. W. Ashe. Staminate flowers and leaves.

Farwell 1354, Belle Isle, Mich., October 1893 (N. Y.). Twig, leaves, fruit (in packet). (Each of the two mounted sheets at N. Y. of 1893 collections have May and October material on them.)

Farwell 1354, Belle Isle, Mich., Sept. 14 and Oct. 15, 1897 (N. Y.). Twig, leaves, fruit (attached to twig).

Farwell 1354, Belle Isle, Mich., Oct. 1898 and May 1899 (A. A.). Twig, leaves, pistillate flowers, fruits (some loose).

Sargent, Belle Isle, Mich., May 23, 1899 (A. A.). Staminate flowers and leaves.

Dodge, Grosse Isle, Detroit River, Mich., July 22, 1911 (A. A.). Twig, leaves, immature fruit.

No definite specimens were found in the Gray Herbarium, in the Ashe herbarium at the University of North Carolina, nor in the herbaria of the University of Michigan or Michigan State College.

It is uncertain just what constituted the type specimen for Ashe's species. Three letters throw some light on the problem. The first, from A. O. Farwell to Dr. N. L. Britton, dated Jan. 3, 1898, placed in the herbarium of the New York Botanical Garden, reads as follows:

"Two or three years ago Mr. W. W. Ashe wrote me a personal letter asking me to send him specimens of the hickories that grew in my vicinity as he was making a study of the genus. I complied, sending him specimens of what I termed *H. ovata*, *H. minima*, *H. microcarpa*. I have just heard from him and he says that the material sent as *H. microcarpa* can not be referred to that species which is an extreme eastern one. He at the same time asked for more and fresh material. I am sending him a package similar to the one I send you. He thinks it a peculiar form and may describe it. What do you think of it?

"I have noticed but one tree on the island but there may be any number of them as I have not paid much attention to the hickories. It is a tree 20 to 25 feet in height or perhaps a little more. It begins to branch five

or six feet from the ground, the lower branches being well filled with the nuts which are easily within reach of the hand. The tree is compact and in outline oblong or ovate. I think the bark is close. I would be glad to have your opinion of it."

The second letter, from Professor Sargent to Professor W. J. Beal, dated June 2, 1899, and placed in the herbarium of Michigan State College, reads in part as follows:

"I have been out as far as Belle Isle to look up *Hicoria borealis*. I saw the only plant on the island which is supposed to belong to this species. I was not able, however, to distinguish it from the scaly barked pignut which is not rare. According to Mr. Farwell, Ashe did not describe his species from this tree, although he considered that it belonged to his species. According to Mr. Ashe *Hicoria borealis* is common in central Michigan. Ashe in some respects is a good observer but if I have to depend on what I saw at Belle Isle I certainly cannot admit this species of his . . . "

Another letter to Professor Beal, dated June 18, 1899, reads in part as follows:

"I do not think Farwell knows anything about *Hicoria borealis* except as it may be found on Belle Isle. Ashe speaks of it growing in the central part of the state . . . Ashe's notes as to its localities are very vague but I suppose you have his paper. If not, I will have what he says about this species copied and sent to you."

It is possible that Ashe had some specimen on hand not so far located or even thrown away, or he may have been describing characteristic *C. ovalis* var. *odorata* such as H. C. Skeels, Grand Rapids, Mich., October 12, 1895, deposited in the herbarium of Michigan State College (though in the same publication mentioned above he described *H. odorata* and its var. *villosa*).

It would appear, however, from Farwell's letter, from the date of publication of the species, and from Ashe's notation on the herbarium label at the New York Botanical Garden that the type came from the collection of Farwell, and would be the specimens at the New York Botanical Garden collected in 1893 from the Detroit River, even though Sargent, probably referring to the vague data of distribution in Ashe's description, did not believe so. Ashe presumably made a tentative description in 1896 from the specimens first received from Farwell, and had hoped to make a fuller description later from new material. The letter of Farwell, his collection-numbers and locality, the letter of Sargent, and the great similarity of the specimens indicate

that all of the above collections of Farwell and of Sargent are from the same tree, and the true description may safely be based on the combination of these specimens.

I have been unable to find in this group of specimens a fruit quite as small as .5 inch long; although the fruit and the nut (loose in the packet) of the 1893 collections are extremely small, the fruit measures 22 mm. long. I believe that Ashe's measurement is a typographical error, or refers to the body of the nut, which is $\frac{5}{8}$ inch (15 mm.) long, or was described erroneously from memory. The leaves are glandular beneath, but not conspicuously so. The fruit does in most of the collections appear indehiscent, but it is strongly ridged to the base and may dehisce in November after a heavy frost; the nut of the October, 1893, collection is free from the husk.

The descriptions of Britton, apparently based on Farwell's 1893 and 1897 collections, are essentially correct for the type tree. The writer finds, however, that the fruit varies in the different collections from 22-30 mm. long, and is about 20 mm. thick; the terminal bud, as far as collected, is in at least one collection about 10 mm. long, not $\frac{1}{3}$ inch.

Basing their opinions on the small size of the fruit, on the thinness of the husk, which varies from 1 mm. in the original collection to 3.5 mm. in later collections, on the slender twigs, and on the "indehiscent" fruit, Ashe and Britton considered the tree a good species related to *H. odorata* (now *Carya ovalis* var. *odorata*), and Sargent considered it a variety of *Carya ovalis*.

All specimens show, however, definite characteristic tufts of hairs on the serrations ("ciliate" according to Britton) which the writer has pointed out in previous articles are characteristic of *C. ovata* and which never occur in *C. ovalis*. Furthermore some of the husks are 3.5 mm. thick, as indicated above, the leaves darken in drying, the terminal buds are elongate and are similar to those of *C. ovata*, and the nut is white, ridged, and thin-shelled; these are all features of *C. ovata*.

This may be merely an aberrant tree, or it might be a hybrid between *C. ovata* and either *C. glabra* or *C. ovalis*, with the leaves of the first species and the thin husks of one of the pignuts. The writer believes, at least, that it is closer to *C. ovata*, and here transfers it to that species as a variety:

C. OVATA (Mill.) K. Koch var. **borealis** (Ashe), comb. nov. *Hicoria borealis* Ashe, Notes on Hickories, 1896, read before Elisha Mitchell Society, Chapel Hill, N. C. and distributed at the meeting; in Britton, Manual of the Flora of the Northern States and Canada, 1901, p. 325; in Britton and Shafer, Trees of North America, 1908; in Britton and Brown, Illustrated Flora of the Northern States and Canada, 2nd edition, 1913, p. 583. *Carya ovalis* (Wang.) Sarg. var. *borealis* (Ashe) Sargent, in Trees and Shrubs II, 1913, p. 209. *C. borealis* (Ashe) Schneider, in Ill. Handb. Laubholz. 1906, I, p. 803. *H. ovalis borealis* (Ashe) Ashe in Charleston Mus. Quarterly 1: no. 2: p. 129. 1925. *C. ovalis* var. *borealis* (Ashe) Sarg. in Manual of Trees of North America 1933: p. 195.

Differs from the typical species in the usually thin husk, in the somewhat flattened fruit, and in the small size of the fruit. The specimen of Dodge seems to belong here, with small thin-husked fruit and with tufts of hairs on the serrations, but the twigs and leaves are rather hairy as in many trees of *C. ovata*; the specimens from the type tree are glabrate (somewhat minutely puberulent). It was probably on this specimen of Dodge that Sargent based his description of *C. ovalis* var. *borealis*. It is interesting to note that in Otis, Michigan Trees (1915 and later) and in at least two publications of Gleason, *C. microcarpa* (now *C. ovalis*) is described as having hairy twigs. I have not seen any specimen of positive mature *C. ovalis* with clearly hairy twigs.

This is a weak variety. The fruit and nut are about the same size as *C. ovata* var. *Nuttallii* Sarg., whose nut according to Sargent's Manual of Trees (1933) is 15 mm. long and 10–12 mm. broad. Sargent states that the fruit of *C. ovata* ranges from 1 to 2½ inches long (2.5–6.2 cm.) with a husk 3–12 mm. thick.

It should be pointed out that this variety would be impossible to distinguish in a sterile condition from ordinary *C. ovata*.

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ASTER ONTARIONIS THE SAME AS A. PANTOTRICHUS (A. MISSOURIENSIS).—Although the plant generally known as *Aster pantotrichus* Blake (*A. missouriensis* Britton, 1898, not *A. missouriensis* O. Ktze., 1891) is one of the most common species of the Middle West, the late Dr. K. M. Wiegand saw only a few imperfect specimens of it when he prepared his account of *Aster*

lateriflorus and some of its relatives (RHODORA 30: 161-179, 1928). He likewise saw very limited material of a plant found along the Upper St. Lawrence River and about eastern Lake Ontario, which he described as a new species, *Aster ontarionis*. To anyone familiar with the abundant, weedy, and variable midwestern plant, Wiegand's key differences ("heads racemose: pappus copious, soon exserted: stem rather stout: leaves 10-30 mm. wide" for *A. missouriensis*, "heads paniculate: pappus scarcely exserted: stem more slender: leaves narrower, 8-15 mm. wide: plant more like *A. Tradescanti* in habit" for *A. ontarionis*) do not sound convincing. Both have leaves pubescent over the entire under surface. Usually this pubescence is very dense on all of the leaves and leafy bracts, but in occasional plants it is evident only on the lower leaves, which may be withered at flowering time. Another feature of both, not mentioned by Dr. Wiegand because not clearly shown in the specimens available to him, is the presence of creeping and branching rootstocks, by which the plants form dense beds. This affords an easy field distinction between these plants and the related *A. lateriflorus* (L.) Britton, which lacks creeping rootstocks. After examining more than 500 sheets of *Aster pantotrichus* (under the names *A. missouriensis*, *A. miser*, *A. diffusus*, *A. lateriflorus*, and others of more remote relationship) and more than a score of *A. ontarionis*, I am well convinced that only one variable species is represented. The earliest valid name, rather inappropriately, is *Aster ontarionis* Wiegand. Most of the specimens I have examined are annotated as *A. pantotrichus*.

Aster ontarionis is a plant of clay and silt, chiefly in limestone regions, primarily characteristic of stream bottoms and damp grounds in the prairie states of the Middle West, but extending eastward along the lower Great Lakes-St. Lawrence lowland, and occurring locally toward the southeast. Its known limits of distribution are Minnesota, eastern South Dakota, eastern Nebraska, eastern Kansas, central Arkansas, northern Mississippi, northern Alabama, central Tennessee, central Kentucky, Indiana, northern Ohio, northwestern New York, southwestern Quebec, southern Ontario, central Michigan, and Wisconsin (southwestern three-fourths of the state).

The plant reported as *A. missouriensis* var. *thyrsoides* (Gray)

Wiegand in the *Flora of Indiana* by Deam (whose specimens I have examined) is merely one of the many growth forms of the species. Browsed or mowed plants may produce large-leaved shoots with mostly axillary heads. The type of *Aster missouriensis* Britton, figured in Britton and Brown's *Illustrated Flora*, ed. 1, 3: 378, 1898, is such an atypical plant.—LLOYD H. SHINNERS, Southern Methodist University, Dallas, Texas.

ASTER COERULESCENS THE SAME AS A. PRAEALTUS.—The late Dr. K. M. Wiegand, in his account of *Aster paniculatus* and some of its relatives (RHODORA 35: 16-38, 1933) and, following him, Dr. Arthur Cronquist in his revision of the western North American species of *Aster* centering about *A. foliaceus* Lindl. (Amer. Midl. Nat. 29: 429-468, 1943) use the name *A. coerulescens* DC. for a very common and widespread species of the western United States, occurring eastward in the north as far as Wisconsin and Upper Michigan, and southward in the west to New Mexico and Arizona. Both authors assign it to Texas, primarily on the basis of the type collection, which was made by Berlandier "in Mexici districtibus orientalibus provinciae Texas." No date is given in De Candolle's original description (Prodromus 5: 235, 1836), but probable isotypes (despite differences in collection numbers) are dated November and December, 1828. According to Dr. S. W. Geiser's account (*Naturalists of the Frontier*, ed. 2, pp. 30-54, 1948), Berlandier accompanied a group of Comanche Indians and Mexican officers on a hunting expedition from November 19 to December 18, 1828, starting at San Antonio ("Bexar") and making a circle tour north and west through present Kendall, Kerr, Bandera, Uvalde, Medina, and Bexar Counties, above and near the southeastern escarpment of the Edwards Plateau in south-central Texas. This was in the "eastern districts of the Texas province of Mexico" of Berlandier's day. The common and conspicuous wild *Aster* of that area is *A. praealtus* Poir. (or one of the three varieties credited to the area by Wiegand; I question their validity). No species of the *A. coerulescens* type *sensu* Wiegand and Cronquist is known to grow there. The nearest region in which so-called *A. coerulescens* may occur (no specimens are at hand) is in Trans-

Pecos Texas, a region geographically distant (as viewed from Dallas, which is about a third as far from El Paso as is Ithaca, New York), geologically unrelated, and floristically distinct from the area of the type locality of De Candolle's species. Probable isotypes in the U. S. National Herbarium and the Gray Herbarium are clearly *A. praealtus*, with characteristic leaf-texture and venation. I do not concur in Dr. Wiegand's opinion (l. c., p. 27) that Gray was in error in assigning the specimen in his possession to *A. praealtus* (under its former name, *A. salicifolius*). The earliest name for the species erroneously called *A. coerulescens* is apparently *A. hesperius* Gray, *Synoptical Flora* 1 (pt. 2): 192, 1884: "Damp soil and along streams, S. Colorado and New Mexico to Arizona and S. California. Has been variously taken for *A. longifolius*, *Novi-Belgii*, *aestivus*, &c., and coll. by Wright, Greene, Rothrock, Cleveland, Parish, Lemmon, &c."—LLOYD H. SHINNERS, Southern Methodist University, Dallas, Texas.

CHENOPODIUM HYBRIDUM L., var. **Standleyanum** (Aellen), comb. nov. *C. gigantospermum* Aellen, var. *Standleyanum* Aellen in Fedde, Repert. Spec. Nov. xxvi. 147 (1929) and *C. Standleyanum* Aellen, l. c. 153 (1929).

Surely *Chenopodium gigantospermum* Aellen, the commonest American representative of Old World *C. hybridum*, differs from the latter only in its larger seeds. It is so like true *C. hybridum* that acute botanists from Pursh to Standley have detected no difference; neither can others who had compared the plants, except in size of seed. *C. gigantospermum* is properly called *C. hybridum* L., var. *gigantospermum* (Aellen) Rouleau in Nat. Canad. lxxi. 268 (1944). Its seeds are 1.5–2 mm. in diameter, the variety of wide range from the Atlantic to the Pacific. Var. *Standleyanum*, chiefly of the interior of the continent, has the seeds 2–3 mm. broad.—M. L. FERNALD.

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